

Claims

- [c1] A remote control system for a vehicle (1), comprising: a primary heading sensor fixedly attached to the vehicle, said primary heading sensor being adapted to detect a reference heading; a remote control unit comprising a steering input manipulator, said remote control unit being one of (1) portable by a user and (2) rotationally attached to the vehicle relative to a main axis of the vehicle, the remote control unit being adapted to communicate steering input data to - a steering computer programmed to process the steering input data into steering commands and to communicate the steering commands to a steering mechanism of the vehicle; said remote control unit comprises a secondary heading sensor which is synchronized with said primary heading sensor with respect to said reference heading, and said steering input data includes information of an active position of said steering input manipulator relative to the reference heading (N), said active position of the steering input manipulator determining the desired direction of travel of the vehicle regardless of the orientation of the remote control unit relative to the main axis of the vehicle.
- [c2] The remote control system as recited in claim 1, wherein said primary and secondary heading sensors each comprises a compass and said reference heading is correlated with magnetic north.
- [c3] The remote control system as recited in claim 2, wherein said secondary heading sensor comprises a flux gate compass.
- [c4] The remote control system as recited in claim 1, wherein said steering input manipulator comprises a joystick.
- [c5] The remote control system as recited in claim 4, wherein said steering input

data includes a projected angle between the reference heading and the inclination direction of the joystick.

- [c6] The remote control system as recited in claim 5, wherein said steering input data further includes a desired relative thrust value defined by the degree of inclination from a vertical reference position of the joystick.
- [c7] The remote control system as recited in claim 1, wherein said secondary heading sensor is continuously synchronized with the primary heading sensor.
- [c8] The remote control system as recited in claim 1, wherein said remote control unit is adapted for wireless communication with the steering computer.
- [c9] The remote control system as recited in claim 1, wherein said vehicle is a water-going craft comprising multiple independently steerable propulsion drives.
- [c10] The remote control system as recited in claim 9, wherein said steering commands from the steering computer comprises individually computed thrust and steering angle values for each propulsion drive needed to move the craft in the desired direction of travel as indicated by the steering input manipulator.
- [c11] The remote control system as recited in claim 9, wherein said water-going craft further comprises a bow thruster assembly oriented substantially transversally to the main axis, said bow thruster assembly being directly or indirectly linked to the steering computer.
- [c12] The remote control system as recited in claim 9, wherein said water-going

craft further comprises one or more rudders, said rudders being directly linked to the steering computer (12).

[c13] The remote control system as recited in claim 9, wherein said water-going craft further comprises one or more rudders, said rudders being indirectly linked to the steering computer (12).

[c14] The remote control system as recited in claim 1, wherein said steering input manipulator includes a substantially spherical tracking-ball.

[c15] The remote control system as recited in claim 14, wherein said steering input data includes an angle (P) between the reference heading and the direction of rotation of the tracking-ball.

[c16] The remote control system as recited in claim 15, wherein said steering input data further comprises a desired relative thrust value defined by the degree of rotation from a central reference position of the tracking-ball.

[c17] A method for remotely controlling a watercraft, said method comprising: inputting an operator control command indicative of a desired direction of movement of the watercraft into a remote control device; determining an orientation of the remote control device relative to an environmentally based reference system at the time of input of the operator control command; determining an orientation of the watercraft relative to the environmentally based reference system at the time of input of the operator control command; and translating the relative orientation of the remote control device into coincidence with the orientation of the watercraft, and based on said translation, correctly controlling movement of the watercraft in the operator input desired direction.

- [c18] The method as recited in claim 17, wherein said environmentally based reference system is a relative correlation to magnetic north.
- [c19] The method as recited in claim 17, wherein operator manipulation of said remote control device indicates a desired direction of travel and a desired degree of thrust to be imposed on said vehicle in said desired direction.
- [c20] The method as recited in claim 19, wherein said remote control device has one of an operator manipulable (1) joy-stick input and (2) a roller-ball input.